INTERNATIONAL JOURNAL of NURSING PRACTICE

International Journal of Nursing Practice 2014; **20**: 408–417

RESEARCH PAPER

The effect of aromatherapy and massage administered in different ways to women with breast cancer on their symptoms and quality of life

Özlem Ovayolu RN PhD
Assistant Professor, Faculty of Health Science, Gaziantep University, Gaziantep, Turkey

Ümit Seviğ RN PhD
Professor, Faculty of Health Science, Erciyes University, Kayseri, Turkey

Nimet Ovayolu RN PhD
Associate Professor, Faculty of Health Science, Gaziantep University, Gaziantep, Turkey

Alper Sevinç MD
Professor, Department of Medical Oncology, Gaziantep Oncology Hospital, School of Medicine, Gaziantep University, Gaziantep, Turkey

Accepted for publication March 2013

Ovayolu Ö, Seviğ Ü, Ovayolu N, Sevinç A. *International Journal of Nursing Practice* 2014; **20**: 408–417

The effect of aromatherapy and massage administered in different ways to women with breast cancer on their symptoms and quality of life

The primary objective of this study was to assess the effect of aromatherapy and classic massage administered in various ways to breast cancer patients on their symptoms and quality of life. The sampling consisted of 280 patients. Quality of life and symptoms of the patients were evaluated once at baseline and then at week 6 and week 10 following the intervention. After intervention, the control group was observed to have lower total quality of life score and subdomain scores, whereas fragrance, massage and aromatherapy massage groups had higher scores, and the increase was more obvious particularly in the patients in the aromatherapy massage group. Similarly, whereas psychological and physical symptoms were experienced more intensely in the control group, the severity of all the symptoms experienced by the other patients decreased at week 6 and week 10 as compared with baseline especially in the group that was administered massage with aromatherapy.

Key words: aromatherapy, breast cancer, massage, quality of life, symptom, Turkey.

INTRODUCTION

As all over the world, cases of breast cancer are quite frequent in Turkey, and according to data in the annual health statistics of the Ministry of Health for 2010, breast cancer holds the first place among the most frequently

Correspondence: Özlem Ovayolu, Department of Nursing, Faculty of Health Science, Gaziantep University, 270310 Gaziantep, Turkey. Email: oucan@gantep.edu.tr

doi:10.1111/ijn.12128

seen 10 cancer types in women.[1] In cancer, many symptoms are experienced originating from both the disease itself and its treatment, and these symptoms affect patients' quality of life negatively.[2] For this reason, up to 80% of women undergoing a treatment process resort to complementary and alternative treatments to increase their quality of life.[3] This shows that patients seek solutions outside the conventional treatments, and thus, the members of health staff should have adequate knowledge and skills in relation to these methods.

It is known that massage, as one of the complementary therapies in symptom control, is an effective practice in reducing symptoms, helping to cope with problems and increasing quality of life.[4,5] Sturgeon *et al*. who evaluated the quality-of-life effect of classic massage applied for 30 min, three times a week, administered to breast cancer patients[6] and by Stringer *et al*. who evaluated the effect of massage on patients receiving chemotherapy;[7] both studies demonstrated the positive effects of classic massage on the improvement of the quality of life in patients receiving chemotherapy. Therefore, the main objective in our study was to assess the effectiveness of classic massage, with massage administered together with aromatherapy and of aromatherapy using only fragrances.

Aromatherapy practices have been used around the world,[8] and they involve the use of concentrated extracts from various plants and trees in controlling a number of symptoms.[9] For example, rosemary and lavender could reportedly be used for pain control,[10] mint to reduce nausea,[11] and bergamot, lavender and frankincense for depression.[12] However, side effects might occur unless these concentrated extracts are prepared in appropriate conditions and applied properly.[9] Thus, the number of evidence-based studies should be increased to enable careful and knowledgeable administration of aromatherapy. Although there are various studies in different countries exploring the use of aromatherapy[13] and massage,[14,15] only a few studies have been conducted on this subject in Turkey. Although the effect of only fragrance[13] or massage administered together with aromatherapy[12] was assessed in the studies performed in other countries, four groups were set up in this study to enable assessment of the effect of each of fragrance and classic massage alone as well as the efficacy of massage administered together with aromatherapy.

The study hypotheses are the following:

1. Massage is administered together with aromatherapy effective in controlling physical and psychological symptoms and in raising mean subdomain scores and total score of quality of life.
2. Aromatherapy is administered using fragrances effective in controlling physical and psychological symptoms and in raising mean subdomain scores and total score of quality of life.
3. Classic massage is effective in controlling physical and psychological symptoms and in raising mean subdomain scores and total score of quality of life.
4. Effectiveness of these three practices is different in controlling physical and psychological symptoms and in increasing mean subdomain scores and total score of quality of life.

MATERIALS AND METHODS

Design and sample

The research was conducted that included women with breast cancer who were admitted to the chemotherapy unit of a private branch hospital in Southeastern Anatolia in Turkey between February 2009 and April 2010. The study sample included non-pregnant, Turkish-speaking women who were at least 18 years old who received chemotherapy for breast cancer. Furthermore, for eligibility, patients were required to meet the following criteria: not being at stage IV; not having used anticoagulants; absence of heart failure, cellulite, open wounds, fracture, epilepsy, haemorrhage, paraplegia, pacemakers or any psychiatric problems.[4,14] The minimum sample size was estimated based on the previous study[16] for effect size 1.9 ($1\text{-}\beta = 0.80$, $\alpha = 0.05$, power: 80%). In this current study, a total of 280 patients met the study criteria and were randomly assigned into four separate groups. Each of the four groups contained 70 patients. Two hundred ninety-three patients were recruited, with 13 excluded due to death and five due to transportation problems. The patients who met the study criteria were assigned to intervention and control groups. The intervention group was divided into three subgroups: the group in which patients smelled aromatic oils, the group in which patients received classic massage and the group in which patients received massage with aromatic oils. The first patient was included in the control group, the second in the fragrance group, the third in the massage group, the fourth in the aromatherapy massage group and so on.

Consent was received from the patients who were included in the study after they were provided with necessary explanation about the study's objectives and the application methods of the research, as well as the

intended use of the obtained results. Permission was received from the institution where the research was conducted, and approval was obtained from the Ethics Committee. Written permission to use the Rotterdam Symptom Checklist was received from Can. Written permission to use the quality of life scale was received from Özyılkan.

Measures

Data collection instruments

Research data were collected by using a questionnaire that included questions about the socio-demographic and disease-related characteristics of individuals, the quality of life scale, and the Rotterdam Symptom Checklist. Data collection forms were applied using the face-to-face interview technique. Each question in the forms was read one by one to those who were illiterate, and the answers were recorded in writing.

The quality of life scale and the Rotterdam Symptom Checklist were applied to the control and intervention groups at weeks 6 and 10. The application intervals in the control and intervention groups (applications performed after the first interview and during weeks 6 and 10) were determined by reviewing the Wilkinson *et al*. study that was conducted using a larger population of women with breast cancer.[16]

Questionnaire

This study used a questionnaire prepared by the researchers with support from literature on the subject in order to determine the socio-demographic and disease-related characteristics of women with breast cancer.[16,17]

Quality of life scale

This scale was developed by Ozyilkan *et al*. to evaluate cancer patients, and its validity and internal consistency were established by the same investigators. It includes eight categories: general well-being, physical symptoms and activity, sleep disorders, appetite, sexual function, perception function (perceiving one's self and one's environment), medical interaction (the need for professional help), social relationships, and work performance. The total score obtained from the scale varies between 42 and 210. Higher total scores indicate a higher quality of life.[18,19] In this current study, the Cronbach's alpha value of the quality of life scale total score was determined to be 0.90 in the first week, 0.89 in the sixth week and 0.90 in the tenth week. All subdomain scores were determined to be 0.90 for the first, sixth and tenth weeks.

Rotterdam symptom checklist

The Turkish validity and reliability study of the Rotterdam Symptom Checklist, developed by De Haes *et al*.,[20] was performed on cancer patients by Can *et al*.[21] The checklist is used to evaluate the distress induced by the symptoms experienced by cancer patients. The checklist consists of the following two subdomains: psychological distress and physical distress. The higher scores indicate a higher level of distress. In this study, the Cronbach's alpha value for the overall total score of the Rotterdam Symptom Checklist was determined to be 0.92 for the first week, 0.91 for the sixth week and 0.92 for the tenth week; and the physical and psychological subdomain scores varied between 0.93 and 0.91 in the first, sixth and tenth weeks.

Treatment arms

Fragrance group. The essential oils used were lavender, mint, chamomile, jasmine, violet, rosemary and eucalyptus blended in proportions of 2:2:2:1:1:1:1, which were diluted 1.1% with sweet almond carrier oil 90 mL and poured onto a sterile sponge.[11,12,22–24] In a separate massage room, the women in the fragrance group smelled the mixture for 5 min, three times a week over the course of 1 month.[10,11,13]

Classic massage group. The women in the classic massage group received 35 min massage with olive oil applied to their legs (15 min), arms (10 min), feet (5 min) and hands (5 min), three times a week over the course of 1 month.[5,15,25] Prior to administration of massage, the person who would do the massaging received training on classic massage from an academic in addition to her knowledge of massaging techniques she had received during her undergraduate education. She also increased her knowledge of massaging by watching the training CDs prepared specifically for this purpose.

Aromatherapy massage group. The women in the aromatherapy massage group received a classic 35 min massage with aromatherapy oils. Similarly, the aromatic oils chosen and prepared for the fragrance group were applied to the participants' legs (15 min), arms (10 min), feet (5 min) and hands (5 min), three times a week over the course of a month.[11,12,22–24] When applying aromatherapy massage, the same techniques as those used in classic

massage were applied; the only difference is the use of aromatic oils in aromatherapy massage rather than olive oil used in classic massage.

Control group. During all follow-ups, the patients did not receive any intervention other than routine care given in the chemotherapy unit.

The massage was administered on an examination couch 60 cm in width and 75 cm in height in a reserved, silent room on the chemotherapy unit. The average room temperature was 25°C. A pillow was placed under the participant's head, knees and heels to increase the mechanical effect of the massage and to facilitate lymphatic blood flow. After the patient was taken to the examination couch, the massage was administered in supine and prone positions.[6] The massage was performed using conventional techniques, including effleurage, friction, Petrissage and percussion.[15,23]

For both the classic massage and the aromatherapy massage, the site, duration and frequency of the procedure were determined by analyzing the results of previously performed studies on this subject.[15,16,23,25] The amount of the oil used for the aromatherapy massage and the classic massage was determined to be ≈ 2–4 mL for each massage treatment application.[26] Almond oil was chosen as the volatile oil, because it is used as a multipurpose body oil especially in palliative care,[25] and it can be easily absorbed through the skin.[27]

Data analysis

A χ^2 (chi-square) significance test was used to determine whether the socio-demographic and disease-related characteristics of the patients showed a similar distribution between the intervention groups and the control group. The analysis of variance was used to evaluate the effects of fragrance, classic massage and aromatherapy massage on quality of life and symptoms at week 6 and 10 as compared with pre-intervention period and to compare them to the scores of the control group. In the comparisons, $P < 0.05$ was accepted as statistically significant.

RESULTS

Participant characteristics

It was determined that the majority of the women who participated in the study were over 40 years old, illiterate, married with children, non-smoking and urban residents with a medium/low level of income (Table 1). Furthermore, most of the women assigned a 'medium level' rating when they were asked to evaluate their overall health and quality of life. Additionally, they were determined to be in the second or third stage of their disease, and the duration of their disease was found to be < 2 years (Table 2).

Results of the group's mean scores of quality of life with respect to the time of measurement

At the end of the analysis, a highly significant difference was found between the control and intervention groups in terms of quality of life scale subdomain scores for general well-being, appetite, sexual function ($P < 0.001$), physical symptoms and activity, and medical interaction and the overall total quality of life score averages ($P < 0.05$). For the quality of life scale, the overall and subdomain score averages decreased over time in the control group, whereas an increase was observed in the score averages of the intervention groups. It was found that the increase in the intervention groups began in week 6, and this increase also continued at a distinctive rate in week 10. The most prominent increase in the overall total quality of life scale score averages was found in the aromatherapy massage group. Among the subdomains, the aromatherapy massage group revealed the highest rate of quality of life improvement compared with the other groups. However, with regard to appetite scores, the aromatherapy group ranked number two behind the fragrance group.

No significant difference was determined between the all groups regarding the quality of life scale score averages for the sleep, perception, social relations, and work performance subdomains ($P > 0.05$). Yet, the score averages of the control group decreased over time, whereas a general increase was observed in the score averages of the intervention groups (Table 3).

Rotterdam symptom checklist findings

The Rotterdam symptom checklist revealed a statistically significant difference between the control and intervention groups in terms of mean psychological, physical and total scores ($P < 0.001$). Although all the physical and psychological symptoms experienced in the control group increased in time, they decreased in the intervention groups, and this decrease was particularly obvious in the aromatherapy group (Table 4).

Table 1 Distribution of sociodemographic characteristics of the groups

Sociodemographic characteristic	Control group *n* (%)	Fragrance group *n* (%)	Massage group *n* (%)	Aromatherapy massage group *n* (%)	*P*
Age groups					
20–29	4 (5.7)	7 (10.0)	3 (4.2)	3 (4.3)	—
30–39	13 (18.6)	17 (24.3)	16 (22.9)	17 (24.3)	0.630
40–49	24 (34.3)	19 (27.1)	30 (42.9)	24 (34.3)	—
≤ 50	29 (41.4)	27 (38.6)	21 (30.0)	26 (37.1)	—
Educational level					
Non-literate	30 (42.9)	37 (52.9)	25 (35.7)	32 (45.7)	0.823
Literate	6 (8.6)	5 (7.1)	8 (11.4)	4 (5.7)	—
Primary school	27 (38.6)	22 (31.4)	26 (37.1)	26 (37.1)	—
High school and/or higher education	7 (9.9)	6 (8.6)	11 (15.8)	8 (11.5)	—
Marital status					
Married	61 (87.1)	57 (81.4)	65 (92.9)	64 (91.4)	0.150
Single	8 (12.9)	13 (18.6)	5 (7.1)	6 (8.6)	—
Children					
Yes	63 (90.0)	62 (88.6)	66 (94.3)	65 (92.9)	—
No	7 (10.0)	8 (11.4)	4 (5.7)	5 (7.1)	0.610
Residence					
Village	7 (10.0)	6 (8.6)	11 (15.7)	7 (10.0)	0.219
County	8 (11.4)	17 (24.3)	17 (24.3)	18 (25.7)	—
Town	55 (78.6)	47 (67.1)	42 (60.0)	45 (64.3)	—
Employment					
Civil servant	4 (5.7)	3 (4.3)	1 (1.4)	3 (4.3)	0.669
Homemaker	62 (88.6)	65 (92.8)	67 (95.7)	66 (94.3)	—
Retired	4 (5.7)	2 (2.9)	2 (2.9)	1 (1.4)	—
Health insurance					
Yes	67 (95.7)	66 (94.3)	63 (90.0)	66 (94.3)	0.544
No	3 (4.3)	4 (5.7)	7 (10.0)	4 (5.7)	—
Income status					
Low	25 (35.7)	29 (41.4)	25 (35.7)	30 (42.9)	0.742
Medium	45 (64.3)	41 (58.6)	45 (64.3)	40 (57.1)	—
Pre-morbid history of smoking					
Yes	17 (24.3)	10 (14.3)	18 (25.7)	16 (22.9)	0.355
No	53 (75.7)	60 (85.7)	52 (74.3)	54 (77.1)	—
Current smoking status					
Yes	2 (2.9)	4 (5.7)	7 (10.0)	4 (5.7)	0.363
No	68 (97.1)	66 (94.3)	63 (90.0)	66 (94.3)	—

—, data are not significant.

DISCUSSION

In this study evaluating the effects of classic massage, fragrance and aromatherapy massage on the patients' quality of life and symptoms, it was found that all the three practices produced positive effects, and aromatherapy massage was especially more effective. These results indicate that aromatherapy massage provides a long-term improvement in the scores of many of the quality of life scale subdomains; therefore, this procedure may be recommended to improve patient well-being. In

Table 2 Distribution of groups by specific characteristics and treatment related status

Characteristic	Control group *n* (%)	Fragrance group *n* (%)	Massage group *n* (%)	Aromatherapy massage group *n* (%)	*P*
Patient-reported overall health					
Poor	9 (12.9)	10 (14.3)	8 (11.4)	14 (20.0)	0.051
Moderate	36 (51.4)	33 (47.1)	44 (62.9)	45 (64.3)	—
Good	25 (35.7)	27 (38.6)	18 (25.7)	11 (15.7)	—
Patient-reported quality of life					
Poor	9 (12.9)	14 (20.0)	11 (15.7)	14 (20.0)	—
Moderate	41 (58.6)	33 (47.1)	41 (58.6)	49 (70.0)	0.040*
Good	20 (28.5)	23 (32.9)	18 (25.7)	7 (10.0)	—
Duration of illness (month)	21.4 ± 24.8	18.7 ± 20.4	17.0 ± 26.6	22.1 ± 26.7	0.587
Comorbidity					
Yes	26 (37.1)	25 (35.7)	21 (30.0)	22 (31.4)	—
No	44 (62.9)	45 (64.3)	49 (70.0)	48 (68.6)	0.780
Type of therapy previously received for the illness					
Chemotherapy	15 (21.4)	13 (18.6)	12 (17.1)	19 (27.1)	—
Surgery	17 (24.4)	9 (12.9)	21 (30.0)	21 (30.0)	—
Chemotherapy + radiotherapy + surgery	15 (21.4)	20 (28.6)	15 (21.4)	9 (12.9)	0.238
Chemotherapy + surgery	15 (21.4)	21 (30.0)	13 (18.6)	16 (22.9)	—
Radiotherapy + surgery	8 (11.4)	7 (10.0)	9 (12.9)	5 (7.1)	—
Number of Chemotherapy cures					
1–4 cures	30 (42.9)	28 (40.0)	44 (62.9)	35 (50.0)	—
5–8 cures	22 (31.4)	21 (30.0)	10 (14.3)	19 (27.1)	0.109
≤ 9 cures	18 (25.7)	21 (30.0)	16 (22.8)	16 (22.9)	—
Stage of disease					
Stage I	13 (18.6)	10 (14.3)	9 (12.9)	4 (5.7)	—
Stage II	30 (42.9)	28 (40.0)	22 (31.4)	28 (40.0)	0.187
Stage III	27 (38.5)	32 (45.7)	39 (55.7)	38 (54.3)	—

* Significant; —, data are not significant.

previously conducted studies, aromatherapy massage was reported to increase the quality of life of patients.[16,28,29]

It was also found in this study that all the subdomain scores and total score of quality of life increased in the classic massage and fragrance groups although not as obviously as in the aromatherapy massage group. Accordingly, it may be stated that nurses who do not have sufficient time to apply aromatherapy massage might apply aromatherapy with fragrance. In cases when the herbal oils required for aromatherapy massage cannot be obtained, nurses may use a classic massage as part of their nursing interventions to increase the quality of life of patients.

In this study where not only the effects of three different practices on the patients' quality of life but also on their symptoms were examined, it was found that although psychological and physical symptoms worsened in the control group in time, they improved in the massage group, but this improvement in physical symptoms deteriorated again at week 10. These results indicate that massage should be applied continuously to maintain its positive effect in the short term (6 weeks), and its effect should be reassessed at certain intervals.

Different studies that assessed the effect of aromatherapy with different patient groups reported that aromatherapy reduced the symptoms experienced by patients[12,22] affected by physical–psychological well-being in a positive way[5,7,29,30] and may be used as a safe nursing intervention.[31] Similarly, this study found that psychological and physical symptoms, and their severity, decreased

Table 3 Distribution of groups' quality of life mean subdomain scores by measurement times

Groups	Time	Subdomains of quality of life								
		General well-being	Physical symptom and activity	Sleep	Appetite	Sexual function	Perception function	Medical interaction	Social relations and work performance	Overall
		$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD \pm SD$	$\bar{X} \pm SD \pm SD$
Control	Baseline	22.3 ± 6.2	20.9 ± 5.9	9.5 ± 3.2	7.3 ± 2.4	9.9 ± 4.9	19.0 ± 5.5	10.2 ± 3.6	24.0 ± 4.7	123.2 ± 26.1
	Week 6	20.6 ± 5.6	19.8 ± 5.6	8.4 ± 3.4	6.8 ± 2.0	9.4 ± 4.0	18.0 ± 5.4	10.6 ± 3.9	22.7 ± 4.5	116.1 ± 24.1
	Week 10	20.1 ± 5.1	19.1 ± 4.8	7.8 ± 2.7	6.4 ± 1.9	8.9 ± 3.8	17.4 ± 5.0	10.0 ± 3.7	22.5 ± 4.6	112.5 ± 21.8
Fragrance	Baseline	20.7 ± 5.5	20.2 ± 6.5	9.6 ± 4.1	6.5 ± 2.9	9.8 ± 4.5	17.1 ± 6.3	9.7 ± 3.3	23.3 ± 3.9	117.4 ± 26.4
	Week 6	21.1 ± 5.8	21.6 ± 5.6	9.5 ± 3.8	6.5 ± 2.4	9.7 ± 3.7	17.5 ± 5.0	11.0 ± 3.6	23.2 ± 4.4	120.3 ± 23.8
	Week 10	22.0 ± 4.7	21.6 ± 5.6	10.1 ± 3.6	8.9 ± 2.5	10.2 ± 3.7	18.1 ± 5.7	11.6 ± 4.6	23.0 ± 4.7	123.0 ± 24.4
Massage	Baseline	23.2 ± 4.4	20.6 ± 4.8	9.2 ± 4.3	7.8 ± 2.2	10.9 ± 3.5	17.9 ± 5.8	11.1 ± 3.5	24.5 ± 3.8	125.8 ± 21.0
	Week 6	23.6 ± 4.2	23.2 ± 4.4	9.2 ± 3.8	7.3 ± 1.8	11.5 ± 3.5	18.5 ± 5.2	11.6 ± 3.1	24.6 ± 4.3	128.8 ± 20.1
	Week 10	24.6 ± 4.9	23.8 ± 5.6	10.5 ± 3.4	8.3 ± 1.8	12.7 ± 2.8	20.4 ± 4.4	13.6 ± 3.5	25.2 ± 4.6	136.0 ± 19.1
Aroma-therapy massage	Baseline	20.4 ± 6.2	18.1 ± 5.3	8.4 ± 4.2	7.2 ± 2.7	9.2 ± 4.0	16.1 ± 5.1	9.0 ± 3.1	22.1 ± 4.5	110.9 ± 24.4
	Week 6	22.8 ± 5.4	22.4 ± 4.8	10.1 ± 3.4	7.9 ± 2.0	11.5 ± 4.0	18.5 ± 5.1	11.3 ± 3.1	23.9 ± 5.8	129.0 ± 20.8
	Week 10	25.6 ± 5.2	25.4 ± 5.8	11.3 ± 2.9	8.4 ± 1.6	12.9 ± 3.5	21.7 ± 4.8	13.9 ± 3.4	26.4 ± 5.6	146.0 ± 22.1
P		0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.562	**0.001**
		0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	0.001*	**0.001**
		0.001*	0.008*	0.061	0.001*	0.001*	0.290	0.003*	0.191	**0.001**

* Significant. SD, standard deviation.

Table 4 Distribution of groups' Rotterdam symptom checklist mean subdomain scores by measurement times

Groups	Time	Subdomains of Rotterdam Symptom Checklist		
		Psychological $\bar{X} \pm SD$	Physical $\bar{X} \pm SD$	Overall $\bar{X} \pm SD$
Control	Baseline	19.0 ± 5.8	41.5 ± 9.2	60.8 ± 13.5
	Week 6	19.3 ± 5.4	42.9 ± 7.9	62.2 ± 11.8
	Week 10	22.4 ± 4.7	44.8 ± 7.9	67.2 ± 11.2
Fragrance	Baseline	20.3 ± 6.3	45.0 ± 10.9	65.5 ± 15.5
	Week 6	19.0 ± 5.5	42.2 ± 9.8	61.2 ± 14.1
	Week 10	18.0 ± 4.7	43.0 ± 10.0	61.0 ± 13.4
Massage	Baseline	19.3 ± 5.1	41.0 ± 9.1	60.3 ± 12.2
	Week 6	16.7 ± 3.9	36.3 ± 8.5	53.0 ± 11.1
	Week 10	16.1 ± 3.3	38.6 ± 8.6	54.8 ± 10.8
Aromatherapy massage	Baseline	22.0 ± 5.6	45.3 ± 9.4	67.3 ± 13.8
	Week 6	17.2 ± 4.4	38.1 ± 7.8	55.3 ± 11.0
	Week 10	14.5 ± 4.0	32.7 ± 7.5	47.3 ± 10.1
P		0.001*	0.001*	0.001*
		0.001*	0.001*	0.001*
		0.001*	0.001*	0.001*

* Significant. SD, standard deviation.

significantly in the aromatherapy massage group in both week 6 and week 10. Thus, it may be concluded that aromatherapy massage may be conveniently applied to decrease both physical and psychological symptoms. At the end of the study conducted by Kirshbaum, aromatherapy massage provided relaxation in patients and helped to build a therapeutic communication between the patient and the nurse.[32] At the end of the this study, most of the patients also expressed their satisfaction with the application and requested that the sessions be continued. These results demonstrate that massage, and especially aromatherapy massage, can be used as a therapeutic nursing intervention in patients receiving chemotherapy.

It has been determined that aromatherapy application with fragrance reduced patients' stress,[33] anxiety,[13] depression[31] and pain and increased their level of satisfaction.[34] In our study, psychological symptoms in the fragrance group gradually decreased in weeks 6 and 10, yet the improvement observed in physical symptoms in week 6 deteriorated again in week 10. Thus, it may be noted that aromatherapy application with fragrance should be used continuously to control the patient's symptoms in the long term, and this application should be included in nursing interventions.

CONCLUSIONS

Consequently, it was determined that aromatherapy with fragrance, classic massage and especially aromatherapy massage with aromatic oils increased the total quality of life scale score and subdomain score averages, and decreased the physical and psychological symptoms patients experienced as a result of chemotherapy.

In line with these results, it may be suggested that the administration of aromatherapy massage should be included in nursing interventions to relieve the patients' symptoms and increase their quality of life; nurses who cannot obtain the necessary products for aromatherapy massage at their institutions, or who cannot find sufficient time to apply massage and aromatherapy procedures, should utilize aromatherapy with fragrance, which requires less time. Studies on aromatherapy massage and aromatherapy application with fragrance should be conducted with different patient groups and with a larger population to compare the efficacy of massage, and these studies should be utilized in nursing applications.

Limitation of this study

The limitation of the study is that it was performed only on women with breast cancer and did not include other cancer types.

ACKNOWLEDGEMENTS

We also express our thanks to Sultan Taşçı, Servet Özgür, Neriman Aydın, Alper Cenk Gürkan and Serap Parlar Kılıç. We would like to thank all the patients who agreed to participate in the study.

REFERENCES

1 Mollahaliloğlu S, Başara BB, Eryılmaz Z. T.C. Health Statistics of the Ministry of Health 2010. Available from URL: http://www.tusak.saglik.gov.tr/saglik_istatistikleri_yilligi_2010.pdfs:25-28. Accessed 17 May 2012.
2 Gültekin Z, Pınar G, Pınar T *et al*. Health-related quality of life and health care services expectations of the patients with lung cancer. *International Journal of Hematology and Oncology* 2008; **2**: 99–106.
3 Wyatt G, Sikorskii A, Wills CE, Su H. Complementary and alternative medicine use, spending, and quality of life in early stage breast cancer. *Nursing Research* 2010; **59**: 58–66.
4 Sagar SM, Dryden T, Wong RK. Massage therapy for cancer patients: A reciprocal relationship between body and mind. *Current Oncology* 2008; **14**: 45–56.
5 Imura M, Misao H, Ushijima H. The psychological effects of aromatherapy-massage in healthy postpartum mothers. *Journal of Midwifery and Women's Health* 2006; **51**: 21–27.
6 Sturgeon M, Wetta-Hall R, Hart T, Good M, Dakhil S. Effects of therapeutic massage on the quality of life among patients with breast cancer during treatment. *Journal of Alternative and Complementary Medicine* 2009; **15**: 373–380.
7 Stringer J, Swindell R, Dennis M. Massage in patients undergoing intensive chemotherapy reduces serum cortisol and prolactin. *Psycho-Oncology* 2008; **17**: 1024–1031.
8 Nord D, Belew J. Effectiveness of the essential oils lavender and ginger in promoting children's comfort in a perianesthesia setting. *Journal of Perianesthesia Nursing* 2009; **24**: 307–312.
9 Hudson CM. Aromatherapy and massage. In: Gokceoglu N (ed.). *The Complete Book of Massage*, 1st edn. Ankara: Dost Publications, 1998; 6–20.
10 Gedney JJ, Glover PTL, Fillingim RB. Sensory and affective pain discrimination after inhalation of essential oils. *Psychosomatic Medicine* 2004; **66**: 599–606.
11 Anderson LA, Gross JB. Aromatherapy with peppermint, isopropyl alcohol, or placebo is equally effective in relieving postoperative nausea. *Journal of Perianesthesia Nursing* 2004; **19**: 29–35.
12 Chang SY. Effects of aroma hand massage on pain, state anxiety and depression in hospice patients with terminal cancer. *Taehan Kanho Hakhoe Chi* 2008; **38**: 493–502.
13 Graham BPH, Browne L, Cox H, Graham J. Inhalation aromatherapy during radiotherapy: Results of a placebo-controlled double-blind randomized trial. *Journal of Clinical Oncology* 2003; **21**: 2372–2376.
14 Corbin L. Safety and efficacy of massage therapy for patients with cancer. *Cancer Control* 2005; **12**: 158–164.
15 Billhult A, Stener-Victorin E, Bergbom I. The experience of massage during chemotherapy treatment in breast cancer patients. *Clinical Nursing Research* 2007; **16**: 85–99.
16 Wilkinson SM, Love SB, Westcombe AM *et al*. Effectiveness of aromatherapy massage in the management of anxiety and depression in patients with cancer: A multicenter randomized controlled trial. *Journal of Clinical Oncology* 2007; **25**: 532–538.
17 Uçan Ö, Pehlivan S, Ovayolu N, Sevinç A, Camcı C. The use of complementary and alternative medicine in cancer patients: A questionnaire-based descriptive survey from Southeastern Turkey. *American Journal of Clinical Oncology* 2008; **31**: 589–594.
18 Özyılkan Ö, Baltalı E, Tekuzman G, Fırat D. The impact of diagnosis and treatment on the quality of life in breast cancer patients. *Neoplasma* 1998; **45**: 50–52.
19 Özyılkan Ö, Karaağaoğlu E, Toeli A *et al*. A questionnaire for the assessment of quality of life in cancer patients in Turkey. *Materia Medica Polona* 1995; **27**: 153–156.
20 De Haes JC, Olschewski M, Fayers P. The Rotterdam Symptom Checklist—A Manual. The Netherlands: University of Groningen, 1996.
21 Can G, Durna Z, Aydıner A. Assessment of fatigue in and care needs of Turkish women with breast cancer. *Cancer Nursing* 2004; **27**: 153–161.
22 Kim MJ, Nam ES, Paik SI. The effect of aromatherapy on pain, depression and life satisfaction of arthritis patients. *Taehan Kanho Hakhoe Chi* 2005; **35**: 186–194.
23 Rho KH, Han SH, Kim KS, Lee MS. Effects of aromatherapy massage on anxiety and self-esteem in korean elderly women: A pilot study. *International Journal of Neuroscience* 2006; **116**: 1447–1455.
24 Hur MH, Yang YS, Lee MS. Aromatherapy massage affects menopausal symptoms in Korean climacteric women: A Pilot-controlled clinical trial. *Evidence-based Complementary and Alternative Medicine* 2008; **5**: 325–328.
25 Kyle G. Evaluating the effectiveness of aromatherapy in reducing levels of anxiety in palliative care patients: Results of a pilot study. *Complementary Therapies in Clinical Practice* 2006; **12**: 148–155.
26 Shaw D, Annett JM, Doherty B, Leslie JC. Anxiolytic effects of lavender oil inhalation on open-field behaviour in rats. *Phytomedicine* 2007; **14**: 613–620.

27 Gül A, Aslan FE. To compare the effect of simple lymph drainage massage and simple lymph drainage massage with aromatic oils for the prevention of lymphedema after breast cancer operations. *Journal of Breast Health* 2007; **3**: 75–81.
28 Wilkinson S, Aldridge J, Salmon I, Cain E, Wilson B. An evaluation of aromatherapy massage in palliative care. *Palliative Medicine* 1999; **13**: 409–417.
29 Wilcock A, Manderson C, Weller R *et al*. Does aromatherapy massage benefit patients with cancer attending a specialist palliative care day centre? *Palliative Medicine* 2004; **18**: 287–290.
30 Louis M, Kowalski SD. Use of aromatherapy with hospice patients to decrease pain, anxiety, and depression and to promote an increased sense of well-being. *American Journal of Hospice and Palliative Care* 2002; **19**: 381–386.
31 Itai T, Amayasu H, Kuribayashi M *et al*. Psychological effects of aromatherapy on chronic hemodialysis patients. *Psychiatry and Clinical Neurosciences* 2000; **54**: 393–397.
32 Kirshbaum M. Using massage in the relief of lymphoedema. *Professional Nurse (London, England)* 1996; **11**: 230–232.
33 Seo JY. The effects of aromatherapy on stress and stress responses in adolescents. *Journal of Korean Academy of Nursing* 2009; **39**: 357–365.
34 Kim JT, Wajda M, Cuff G *et al*. Evaluation of aromatherapy in treating postoperative pain: Pilot study. *Pain Practice* 2006; **6**: 273–277.